at Peradeniya occurs in the driest part of the year (all of which is very wet). To account for this, he suggests that it is only in the drier period that the transpiration stream can supply enough salts! Then on this assumption he erects another: "If this be the case, the higher internal temperature attained by the coloration of young leaves would promote the some object, viz., the increase of the transpiration stream." All of which is an excellent example of spoiling good observations by bad logic.—C. R. B.

Sex in dioecious plants.—A study of the two mitoses by which the microspores are formed from the mother cell in *Acer negundo* has led DARLING[17] to interpretations and conclusions about which there may be considerable difference of opinion. He finds that all the chromatin of the resting nucleus of the microspore mother cell is contained in the nucleolus. Chromatin from the nucleolus diffuses upon the linin and in this way there is built up a spirem which segments into eight chromosomes. Later, five more chromosomes are formed from the nucleolus, so that, all together, there are thirteen chromosomes formed in these two ways. After the second mitosis, two of the daughter nuclei differ from the other two in containing one more chromatin mass, but when the resting stage is reached, the four nuclei look alike.

The writer believes he has found something somewhat analogous to the maturation mitoses in some insects, and that the peculiarities in *Acer negundo* have some connection with the determination of sex.

The fact that the division of the chromosomes at the second mitosis could not be determined with certainty would indicate that the technic was hardly sufficient to establish the claim that the eight and five chromosomes originate differently. The problem, however, is important and the presentation of results suggestive.—CHARLES J. CHAMBERLAIN.

Chlorophyll of seeds.—MONTEVERDE and LUBIMENKO, working independently, have arrived at the same conclusion regarding the green pigment of the seeds of thirty-eight Cucurbitaceae, viz., that it is not chlorophyll, but that it resembles the protochlorophyll of etiolated leaves.[18] Yet neither in the living nor the dead hulls does it go over, under the influence of light, into chlorophyll. It appears rather late in the development of the seed, in chromatophores which are indistinguishable from chloroplasts and may even contain chlorophyll also. Its absorption spectrum differs in certain details from that of living green leaves. They propose to call this new pigment chlorophyllogen, retaining the name protochlorophyll for the optically altered chlorophyllogen which one can observe in dead tissues and neutral solutions. This chlorophyllogen becomes transformed into chlorophyll under the influence of light plus some other yet unknown factor

[17] DARLING, CHESTER ARTHUR, Sex in dioecious plants. Bull. Torr. Bot. Club **36**: 177–199. *pls. 12–14.* 1909.

[18] MONTEVERDE, N., UND LUBIMENKO, W., Ueber den grünen Farbstoff der inneren Samenhülle einiger Cucurbitaceen und dessen Beziehung zum Chlorophyll. Bull. Jard. Imp. Bot. St. Petersbourg **9**: 27–44. 1909. (Russian: German résumé.)

(possibly an enzyme produced only in light), which is not operative in cucurbitaceous seeds, but is active in etiolated leaves.

Perhaps other so-called chlorophyll originating in the dark will prove to be only this forerunner of chlorophyll. The authors will continue their further researches together. Out of 800 species in 110 families observed, they have found chlorophyllogen in representatives of 18 families.—C. R. B.

Nucleoli in Marsilia.—To prove whether or not there is any transfer of chromatin substance into nucleoli and vice versa, BERGHS[19] has studied vegetative mitosis in the root and prothallium of *Marsilia macra* and *M. Drummondii*. A peculiar condition of the nucleolus in Marsilia was described two years ago by STRASBURGER. The resting nucleus in these species generally contains a single conspicuous nucleolus, which always takes stains deeply, and at a certain stage almost all of the stained substances are found only in the nucleolus. BERGHS, after following the whole processes of vegetative mitosis in the meristem of the root and in the young prothallium, gives the following results. The nucleolus is achromatophile at the moment of its appearance, and afterward becomes more and more chromatophile; at the same time the chromatin network loses its chromatin and decreases in size. The chromatin network in the resting nucleus certainly does not contain the total substance of the definite chromosomes, and in the prophase the nucleolus loses chromatin matter during the formation of chromosomes. The fact that the nucleolus is formed as an achromatic substratum and becomes impregnated with chromatin material during the resting stage, the author believes, indicates a transfer of chromatin material between the nucleolus and chromosomes.—SHIGÉO YAMANOUCHI.

Development of Aeginetia.—The morphology and anatomy of *Aeginetia indica* were described by KUSANO a few years ago, but he found nothing peculiar which would distinguish it from Orobanche. But it does show interesting features in its germination and early growth, which he describes in a recent paper.[20] The short-lived seeds germinate only under stimulation by some substance or substances arising from the roots of vascular plants, and the development of the seedling takes place only on certain species of monocotyledons. The first sign of germination is the appearance of large globular cells at the radicular end of the embryo, from several of which develop hairs, sometimes a millimeter in length, that protrude in all directions. When they come into contact with the host root, they attach themselves (by slight insertion or cement?), and then coil irregularly, thus drawing the embryo close to the host. These tendril-like hairs KUSANO calls hair-tendrils. If the host be suitable the seedling develops a tubercular body, from which arises the primary haustorium. This secures nutriment from the host, making possible later the development of a stem and root system, which arise much as in Orobanche.

[19] BERGHS, J., Les cinèses somatiques dans le Marsilia. La cellule **25**:73–84. *pl. 1.* 1908.

[20] KUSANO, S., Further studies on *Aeginetia indica*. Bull. Coll. Agric. Tokyo Imp. Univ. **8**:1–20 (?). *pl. 7.* 1908.